

EXPLORING THE EFFECT OF EMOTIONS ON MOBILITY-DISABLED TOURISTS' EXPERIENCE AT MUSEUMS

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ABSTRACT: *This paper aims to assess the effect of perceived quality of museum physical environment on emotions and behavioral intentions of mobility-disabled visitors and to test the mediating role of emotions between perceived quality and behavioral intentions in the museum context. A survey questionnaire is developed and then tested for reliability and validity using a sample of museum mobility-disabled visitors. EFA and CFA were used to identify factors and to assess model validity. SME was performed to test the hypothesized relationships. The accessibility dimensions of the museum physical environment were the key factors affecting the disabled emotional affect. Results revealed that the negative emotions have a greater impact on visitors' behavioral intentions than positive emotions. Furthermore, the study shows that emotions play a mediating role between museum physical environment and behavioral intentions. The study provides museum managers with a conceptual and empirically verified framework that captures disabled visitors' perceptions of museum physical environment and the potential effect of emotions on behavioral intentions. Therefore, museum managers can assess the quality of certain services designed for visitors with special needs. This study serves as an exploratory research that investigates the effect of emotions on the disabled experience thus providing a better understanding of the emotional side of mobility-disabled tourist experience.*

KEYWORDS: Emotions, Mobility-Disabled, Museum Physical Environment

INTRODUCTION

The disabled market is becoming a more significant market in the tourism industry (Blichfledt and Nicolaisen, 2011; Huh and Singh, 2007; Darcy, 2010). Governmental regulations concerning disabled people have provided several guidelines for individuals with disabilities related to both businesses and society. This in turn directed attention to disabled people particularly in terms of service providers in tourism and hospitality industry (Shaw and Coles, 2004).

Likewise, there has been a growing interest in academic research for disabled travel market during the last few decades which were mostly focused on accessibility (Card *et al.*, 2006; Daniels *et al.*, 2005; Darcy *et al.*, 2010), Hotel and flight experiences (Darcy and Pegg, 2011; Poria *et al.*, 2011; Chang and Chen, 2012; Poria *et al.*, 2010), employment (Gröschl, 2004), needs, motivations and travel behavior (Ray and Ryder, 2003; Burnett and Baker, 2001).

Holiday making, destinations readiness, travel agents and disability market (Shaw and Coles 2004; Freeman and Selim, 2010; Ozturk, *et al.*, 2008; McKercher *et al.*, 2003) were also other disability research areas in tourism literature. While such approaches are important, there are still other areas of disabled tourist experience which has not been explored yet.

During the last few decades several initiatives have been undertaken in academic research to investigate the role of emotions in consumption process (Laros and Steenkamp, 2005; Phillips and Baumgartner, 2002), that was followed by an increase trend in marketing literature to explore the relationship between emotions and customer experience (Babin *et al.*, 1998; Hume and Mort, 2010; Maguire and Geiger, 2015; Mazaheri *et al.*, 2012; Meirovich *et al.*, 2013; Schoefer and Diamantopoulous, 2008; Smith, 2006; Tumbat, 2011;).

Previous research revealed that tourists communicate with the service environment (and personnel) and yield emotional responses (Bigné and Andreu, 2004; Zins, 2002) that substantially influence tourist satisfaction (Otto *et al.*, 1996) and behavioral intentions (Bigné and Andreu, 2004). Prior literature has shown as well that both cognitive and emotional dimensions should be considered in building up models that evaluate tourist experience (Bigné *et al.*, 2005; Oliver *et al.*, 1997; Wirtz *et al.*, 2000).

The influence of service environment on customers' emotions and post-purchase behavior has its roots in Mehrabian and Russell's model (1974). According to the MR model, the environmental stimuli influence the emotional state of customers and this in turn affect the customer's behavioral intentions. The MR model has been applied on academic research in the service industry (Amato and McInnes, 1983; Mazaheriet *al.*, 2012; Writz and Bateson, 1999; Wirtz, *et al.*, 2000). However, assessing the effect of emotions for specific market segments particularly the disabled market has not been considered yet in tourism literature.

Museums are among service institutions that provide various opportunities to examine the impact of emotions on tourists' satisfaction and behavioral intentions. Their suitability to investigate visitors' emotions and being a significant source of stimuli for emotions has been evidenced in previous research (De Rojas and Camarero, 2006; Goulding, 2000).

However, little attention has been paid to explore visitor experience at museums both in academic research as revealed in Kirchberg and Tröndle's study (2012) and in practice since museum visitor research is still limited to collecting data about visitors' numbers and profiles and failed to be employed for further holistic understanding of visitor experience (Falk *et al.*, 1985; Goulding, 2000; Kowashima, 1999; Moscardo, 1996).

This study serves as an exploratory research that would provide a better understanding of the emotional side of disabled tourist experience. Based on MR model and in the view of all that has been mentioned so far, one may suppose that the museum physical environment has a potential impact on disabled visitors' emotional states which in turn influence the visitor behavioral intentions. The study argues that integrating the emotional dimension in assessing mobility-disabled experience in a museum could provide valuable insights to create meaningful experience for disabled visitors. Accordingly, the research aims to propose and test a comprehensive model consisting of perceived quality of museum physical environment, emotions, and behavioral intentions of mobility-disabled visitors. Specifically, the main objectives of the research are to assess the effects of perceived quality of museum physical environment on emotions and behavioral intentions and to test the mediating role of emotions between perceived quality and behavioral intentions in the museum context.

LITERATURE REVIEW

Disabled Market

The Convention on the Rights of Persons with Disabilities (United Nations, 2006, p.4) defines disability to include “those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.”

The disabled population is considered a significant niche market for tourism industry (Freeman and Selmi, 2010; Kim and Lehto, 2012; Smal *et al.*, 2012). According to the WHO (2011), more than one billion people in the world live with some sort of disability, this number is predicted to increase in the future due to aging of population, greater risk of disability among older persons and the worldwide growth of persistent health conditions. The number of disabled people engaged in travel is also increasing (Grösch, 2004). The enactment of governmental regulations concerning disabled people has brought much concern from society and specifically from the hospitality and tourism industry to the disabled people (Shaw and Coles, 2004) to offer accessible services (Yau *et al.*, 2004).

Recently, the growing interest in the travel industry with this niche market is reflected in the growing number of disabled specialized travel agencies and tour operations, disability organizations and specialized travel websites that provide programs, travel tips, guide books, information and all aspects of disabled travel experience.

Likewise, the academic research has given the disabled travel market a greater attention during the last few years (Burnett and Baker, 2001; Mckercher and Chan 2005). While such approaches are important, the needs of disabled are far more complex than what has been investigated in tourism literature. This travel segment poses several challenges and complex needs (Ray and Ryder, 2003) that should be addressed.

Kim and Lehto (2012) indicated that differences in physical, intellectual and emotional states of disabled people could be interpreted to different requirements and concerns in their travel experience. Therefore, addressing these needs should be a key concern in the tourism industry to provide quality experience for this important travel segment.

Although the effect of emotions on tourist experience has been topic of interest to academic researchers, understanding the effect of emotions on disabled tourists' experience has been rather neglected.

Emotions and tourist experience

Even though there is no certain accepted definition for emotions, one of the most commonly used definitions is Izard's definition (Izard, 1991, p.14) “a feeling that motivates, organizes and guides perception, thought and action”.

Emotions are considered a key element in tourism experience which affects customer satisfaction (Bigné and Andreu, 2004; Kim and Fesenmaier, 2015). Although academic research has traditionally focused on cognitive factors as determinants of tourist satisfaction (Oliver, 1980), several studies are currently dedicated to understand the affective dimension of the tourist experience (Bigné *et al.*, 2008; Nawijn and Fricke, 2015). In their studies, Soscia, (2007) and Zins (2002) revealed that emotions play a key role in understanding customer's

experience and behavior. Similarly, Koenig-Lewis and Palmer (2014) indicated that emotions have a greater influence on cognitive satisfaction. Research has shown as well that emotions have a key effect on behavioral intentions (Allen *et al.*, 1992; Hosany and Prayag, 2013; Jang and Namkung, 2009; Namkung and Jang, 2010; Prayag *et al.*, 2013; Sviri and Olsen, 2012; Tronvoll, 2001; Watson and Spencer, 2007)

Previous research proposed three key approaches to measure emotions. One of the most widely applied approaches in tourism and hospitality research is Mehrabian and Russell's scale (1974) (Amato and McInnes, 1983; Kim and Fesenmaier, 2015; Mazaheri *et al.*, 2012; Witz and Bateson, 1999; Writz *et al.*, 2000) which posited an effect of environmental stimuli on customer's emotional state and this in turn affect the customer's behavioral intentions (Jang and Namkung, 2009)

The MR model formed the basis for many research that investigate the effect of environment stimuli on emotional reactions and how the emotional state of a person acts as a mediator between an environmental stimulus and behavioral intentions. (Brunner-Sperdin and Peters, 2009; Jang and Namkung, 2009; Wakefield and Blodgett, 1994)

Prior research (Servidio and Ruffolo, 2016) has emphasized as well the direct effect of tourist emotional responses on post purchase behavior. In their study, Bigné and Andreu (2004) posited a close relationship between emotions and behavioral intentions. Likewise, several studies which adopted the MR model in assessing the effect of environmental stimuli on customers' emotions assert the coexistence of the relationship between emotions and customer behavioral intentions (Hui and Bateson, 1991; Jang and Namkung, 2009; Koenig-Lewis and Palmer, 2014; Namkung and Jang, 2010)

Emotions and Museum's physical environment

The importance of museum's physical environment in measuring museum service quality experience is well established in literature (De Rojas and Camarero, 2006; Falk and Dierking 1992; Falk and Dierking, 2016; Goulding, 2000; Jeong and Lee, 2006; Lee, 2010; Raajpoot *et al.*, 2010; Rowley, 1999). The physical setting of a museum is considered a key element in visitors learning experience; it conveys certain "messages" and "meanings" to visitors. The museum's physical environment affects positively and enhances visitor "meaning-making" (Lee, 2010) and induces suitable behaviors (Rapaport, 1982).

In their detailed study of the museum physical environment and its impact on visitor's emotions and satisfaction, Jeong and Lee (2006) revealed that the physical environment of a museum consists of three main constructs: *Exhibition environment, ambient environment and museum size*. According to Jeong and Lee (2006), the exhibition environment consists of: "the methods of exhibition", "visual and locomotor accessibility", "contents of exhibits" "illumination" and "rest areas". The ambient environment consists of: "density of visitors", "noise", "complexity of circulation" and "thermal comfort". The museum size consists of: "the net size of exhibition area" and "total staying time". The measures provided by Jeong and Lee (2006) to assess the quality of museum physical environment will adopted in the current study.

Exhibitions are considered the main offering and function of museums (Ahmad *et al.*, 2014) where interaction between visitors and collections takes place. It should be noted here that

recent communication technologies create attractive displays (Herreman, 2004) that provide visitors with fun and excitement (Hashim *et al.*, 2014).

Suitable lighting is essential for supporting visitor's experience (Lee, 2010). Lee (2010) added that temperature, seating areas and spaces between objects are main environmental factors that enhance the visitor's feeling of comfortability at a museum.

The size and layout of a museum is significant for the "visitor's flow experience" and has a direct effect on visitor satisfaction (Jeong and Lee, 2006; Lee, 2010). In other words, spacious areas in a museum could absorb numbers of visitors without feeling of crowd (Raajpoot *et al.*, 2010) which usually has a negative impact on visitors perception of physical density and puts some sort of limitations on the flow of visitors movement at the museum and the resultant noise and queues that the visitors might exposed to during their visit (Goulding, 2000)

Jeong and Lee (2006) indicated as well that circulation in the exhibition area is an important factor that should be paid much concern while designing museums. Goulding (2000) goes further to explain how the total staying time in a museum is affected by the exhibition hall's design and layout since they induce visitors to stay longer periods of time at a museum.

In this concern, Lee (2010) and Raajpoot *et al.*, (2010) confirmed that environments with a good design that facilitate access to areas of interest and information of exhibits have a positive effect on perceived quality. Routing, mapping and seating are all considered as well supporting factors that have a considerable impact on visitor experience (Goulding, 2000).

For visitors with different types of disabilities, it is important to receive equal opportunities to access museums' facilities and services, exhibitions and collections (Woollard, 2004). Accordingly, making museum accessible to different groups is increasingly becoming a key part of their social inclusion responsibility (Munro, 2013). Previous research indicated that museum accessibility involves different features that reflect general aspects of public accommodation such as having entrance that has no stairs and other aspects that specify museum experience such as effective exhibitions interactions (Handa *et al.*, 2010). Today, museums are paying much concern to the legal requirements of the Building Regulations and the Disability Discrimination Act so as to meet the different requirements of visitors with special needs (National Museums of Scotland, 2002). According to the National Museums of Scotland (2002), providing access to information and promotional material, increasing access to the building or site, and improving access to exhibitions and collections are three key dimensions that enhance museum accessibility to visitors with disabilities. In fact, the researcher adopted these measures particularly as they are well structured and more informative since they are categorized into the three main categories mentioned above. They provide special guidance to each category separately which perfectly suit the research needs as it is largely concerned with encompassing different accessible features of museums.

The integration of emotions into the visitor satisfaction process is closely related since most services offered in museums are mostly depending on customer participation. Jeong and Lee (2006) revealed a direct effect of museum physical environment on visitor emotions. Furthermore, Gil and Richie (2009) indicated that emotional aspects of service experience have a stronger impact on visitor experience at a museum than cognitive aspect. Accordingly, considering both cognitive and emotional dimensions in assessing museum visitors' satisfaction is necessary (De Rojas and Camarero, 2008).

Building on previous research that verify the influence of service environment on customers' emotions and behavioral intentions and According to the MR model, that the environmental stimuli influence the emotional state of customers and its subsequent effect on customer's behavioral intentions as well as the mediating role of emotions between an environmental stimulus and behavioral intentions, the current study postulates that environmental stimuli in a museum setting influence the mobility-disabled visitor's emotional state and behavioral intentions. These stimuli include environmental attributes of the museum and museum accessibility dimensions. Accordingly, the following hypotheses are proposed

H1: Museum physical environment is positively associated with visitor's positive emotions.

H2: Museum physical environment is negatively associated with visitor's negative emotions. H3: Positive and Emotions are associated with visitor's behavioral intentions.

H3a: Positive emotion is positively associated with visitor's behavioral intentions.

H3a: Negative emotion is negatively associated with visitor's behavioral intentions.

H4: Positive and negative emotions play a mediating role between the perceived quality of the museum environment and the behavioral intentions of the museum visitors

METHODOLOGY

Measurement

Based on previous research (Del Chiappa et al., 2014; Solomon *et al.*, 1999), which suggests the use of questionnaires for collecting consumption emotion information, quantitative approach was employed. A survey questionnaire is initially developed based on prior literature to assess the relationship between physical environment of museums, emotions and behavioral intentions of mobility-disabled visitors. The questionnaire contained three constructs relating to visitors experience at a museum: perceived quality of museum environment, emotions, and behavioral intentions. The quality of museum physical environment construct as perceived by mobility- disabled visitor were drawn from a broader perspective that integrates interior physical environment of museums –designed for all visitors' segments (13 items) (Jeong and Lee, 2006). The 13 Items were measured using a 5-point likert scale: “very unsatisfactory=1” and “very satisfactory=5”, and specific interior and exterior physical environment of museums designed for mobility-disabled visitors (20 items) that were adopted from (Museums Galleries Scotland, 2008) which aims at improving museums access for mobility-disabled visitors, the 20 items were measured using a

5-point likert scale: “strongly disagree=1” and “strongly agree=5”. Since accessibility influences disabled tourists experience (Card *et al.*, 2006; Dracy *et al.*, 2010), integrating the accessibility dimension into a model that assesses the quality of museum physical environment from a disabled perspective was indispensable.

The second part of the questionnaire aimed at examining disabled emotional affect during their museum visit. The emotions' items were developed based on previous research (Del Chiappa *et al.*, 2014) that investigates the effect of emotions on museum visitors' satisfaction. Twelve

emotions were considered representing positive and negative emotions based on a five-point Likert scale: “strongly disagree=1” and “strongly agree”.

In addition, visitors’ behavioral intentions, such as intentions to give positive word of mouth to others, intentions to return back, and recommend the museum to others, were adopted from (Tsauro, *et al.*, 2015)

Visitors’ socio-demographic variables represent the last part of the questionnaire.

Data collection and sample

The sample population was mobility-disabled who visited a museum within the last 6 month. According to Keaveney’s study (1995), service experiences can be recalled reliably within the prior six months. An initial contact with tour operators and travel agents specialized in organizing and conducting programs for disabled has been carried out through emails to reach the disabled market. Tour operators and travel agents who agreed to distribute the questionnaires among their customers have been provided with a copy of the survey along with a statement at the beginning informing their customers the purpose of the study. The survey was written in English. The average time to collect questionnaires from agents was two months. E-mail messages were used to follow-up. The completed questionnaires were collected by e-mail.

Of the 350 questionnaires distributed, 225 were received. After removing incomplete questionnaires, a total of 211 questionnaires was used in the data analysis. Of the remaining 211 surveyed visitors, 45% were Romanians, 20% Americans 15% British, and 20% other nationalities. 30% have visited Palace of Parliament Bucharest Museum, 22 % have visited Whitney Museum of American Art in New York, 20% have visited Cleveland Museum of Art, 18% have visited Village museum in Bucharest, and 10 % have visited The Egyptian Museum. 57.3 % were males while 42.7% were females, 38% were between 30 and 39 years old, 56% never married, 45% were university graduates and 38.4% some high school or less.

DATA ANALYSIS AND RESULTS

Exploratory factor analysis

To examine the validity and reliability of the museum physical environment construct, an exploratory factor analysis (EFA), and a Cronbach’s alpha criterion of 0.7, as suggested by Nunnally (1978), was used to assess the inter consistency of the construct. Item-to-total correlation values within each construct were employed as the base for removing items that would improve alpha values. Since alpha values are sensitive to redundancy and correlations between items, redundant items were deleted until alpha values exceeded .70 and only items that represented the dimension were retained. Six items were removed and the remaining items were 27 items with 3 constructs. Principal component analysis and the Varimax rotation method were used for factor extraction. Result showed that

Bartlett’s Test of Sphericity was significant ($p < 0.05$) and KMO measure of sampling adequacy was .71 which is above the recommended level (minimum value 0.60) (Hair *et al.*, 2006) indicating that data was appropriate for factor analysis. Only factors with eigenvalue greater than or equal to 1.0 were considered, items were retained if they load at 0.4 or more on a

factor and did not load at more than 0.3 on any other factors. Only two items were removed as they failed to load at 0.400 or above on any factor. The remaining 25 items were rerun and a three-factor structure emerged again with items clearly loading on their factors at 0.400 or above (Nunnally and Bernstein, 1994). The three constructs were named based on the items that loaded heavily on them: the first construct with seven items is concerned with “access to information and building”, the second construct includes nine items associated with “access to displays and special services” and the third construct is made up of nine items and is concerned with “exhibitions and collections”. The total cumulative variance explained by these three factors was 57.45% and their Cronbach’s alpha values were 0.90, 0.92 and 0.87 respectively. Moreover, Cronbach’s alpha values for positive and negative emotions, and behavioral intentions was >0.7 .

Confirmatory factor analysis

To verify the validity of the measurement model, confirmatory factor analysis (Hair *et al.*, 2014) was run to assess convergent and discriminant validity. AMOS program (version 20.00) was used to evaluate the measurement model. Standardized factor loadings, composite reliability, and average variance extracted (AVE) were calculated to assess the convergent validity of the measurement model. Initial confirmatory factor results suggested that four items with low loadings (less than .50) should be removed from further analyses (Anderson and Gerbing, 1988). Therefore, the final confirmatory model includes 36 item indicators and 6 latent factors. Table 1 shows the model estimates. All standardized factor loadings of the 36 items ranged from .57 to .946, and all loadings were significant at $p < 0.05$. The coefficient alpha values ranged from .825 to .932, showing evidence of the internal consistency of the items of each construct (Nunnally, 1978). The composite reliabilities of the constructs ranged from .850 to .936, which exceed the acceptable .70 level. The AVE values ranged from .44 to .69, which are approaching or greater than the acceptable level of .50. The construct is close to or meets the criteria for convergent validity.

Table 1: Results of confirmatory factor analysis

Construct and items	Standardized factor loadings	Cronbach’s alpha	Composite reliability	Average variance extracted
Access to information and building		.892	.899	.562
The museum offers virtual tours	.866			
All other areas of the building or site are easily to access physically	.740			
The museum has toilets which are clearly signposted	.709			
The museum has available seating around the building or site to rest	.767			
The museum has multilevel counter (to buy tickets, make enquiries.)	.647			
The museum’s website is clear and informative	.685			
The museum has its own transport scheme	.795			

Access to displays and special services		.932	.936	.623
The museum's labels and text panels fixed at a height that can be read by wheelchair users or people sitting down	.805			
The museum interpretation scheme allows for the free movement of wheelchairs	.738			
The museum allows free admission to a person assisting a disabled visitor	.699			
The museum has wheel chair accessible toilets	.892			
The museum has accessible lifts	.775			
The museum has handrails	.752			
The museum has ramps	.840			
The museum has well-trained staff to welcome (deal with) disabled visitors.	.818			
The museum offers clear guidelines about its location and transport links.	.765			
Exhibitions and collections		.855	.859	.435 (.44)
The net size of the exhibition area	.696			
Thermal comfort	.603			
Complexity of circulation	.806			
Density of visitors	.649			
Illumination	.606			
Visual and locomotors accessibility	.709			
Content of exhibition	.609			
methods of exhibition	.571			
Positive emotions		.825	.850	.542
I felt at ease and safe	.946			
I have learnt something new	.799			
I felt astonished	.703			
I felt guided	.591			
I was happy	.577			
Negative emotions		.865	.868	.621
I felt tired	.696			
I felt bored	.822			
I felt like wasting my time	.893			
I was tense	.727			
Behavioral intentions		.856	.866	.685 (.69)
I would like to recommend	.789			
I would like to come back	.914			
I would like to give WOM in the future	.774			

Note: the standardized factor loadings were significant at the .05 level.

To examine the discriminant validity, Fornell and Larcker (1981) recommended that the AVE estimates be greater than the squared correlation between any two constructs. As shown in

Table 2, the AVE extracted in each construct was higher than the squared correlation between two constructs, providing evidence of discriminant validity.

Table 2: Correlation among constructs.

Construct	AI	AD	EC	PEm	NEm	BI
AI: access to information and building	.562					
AD: access to displays and special services	.694**	.623				
EC: exhibitions and collections	.357**	.435**	.435			
PEm: Positive Emotions	.576**	.522**	.275**	.542		
NEm: Negative Emotions	.418**	.167**	.115**	.008**	.621	
BI: Behavioral Intentions	.391**	.010**	.105**	.511**	-.238**	.685

Note: The bold numbers on the diagonal are the AVE. Off-diagonal elements are the squared correlations among constructs, ** $p < .01$.

Structural equation modeling and hypothesis testing

Structural equation modeling was performed to confirm the validity of the suggested model, and to test the hypothesized relationships between the constructs. The goodness of fit statistics showed a good fit among museum physical environment, positive and negative emotions, and behavioral intentions ($\chi^2/df = 410.22/132$, $p < .001$, RMSEA=0.08, GFI=0.91, CFI=0.93, NFI=0.92). The squared multiple correlation (SMC; R^2) for behavioral intentions were high; more than half of the variance (SMC = .66) in behavioral intentions was explained by the direct effects of positive and negative emotions and the indirect effects of museum physical environment dimensions (access to information and building, access to displays and special services, and exhibitions and collections). For positive emotions (SMC = .34), the variance was explained by the direct effects of museum physical environment dimensions. While the variance of negative emotions (SMC = .23) explained by museum physical environment dimensions was less.

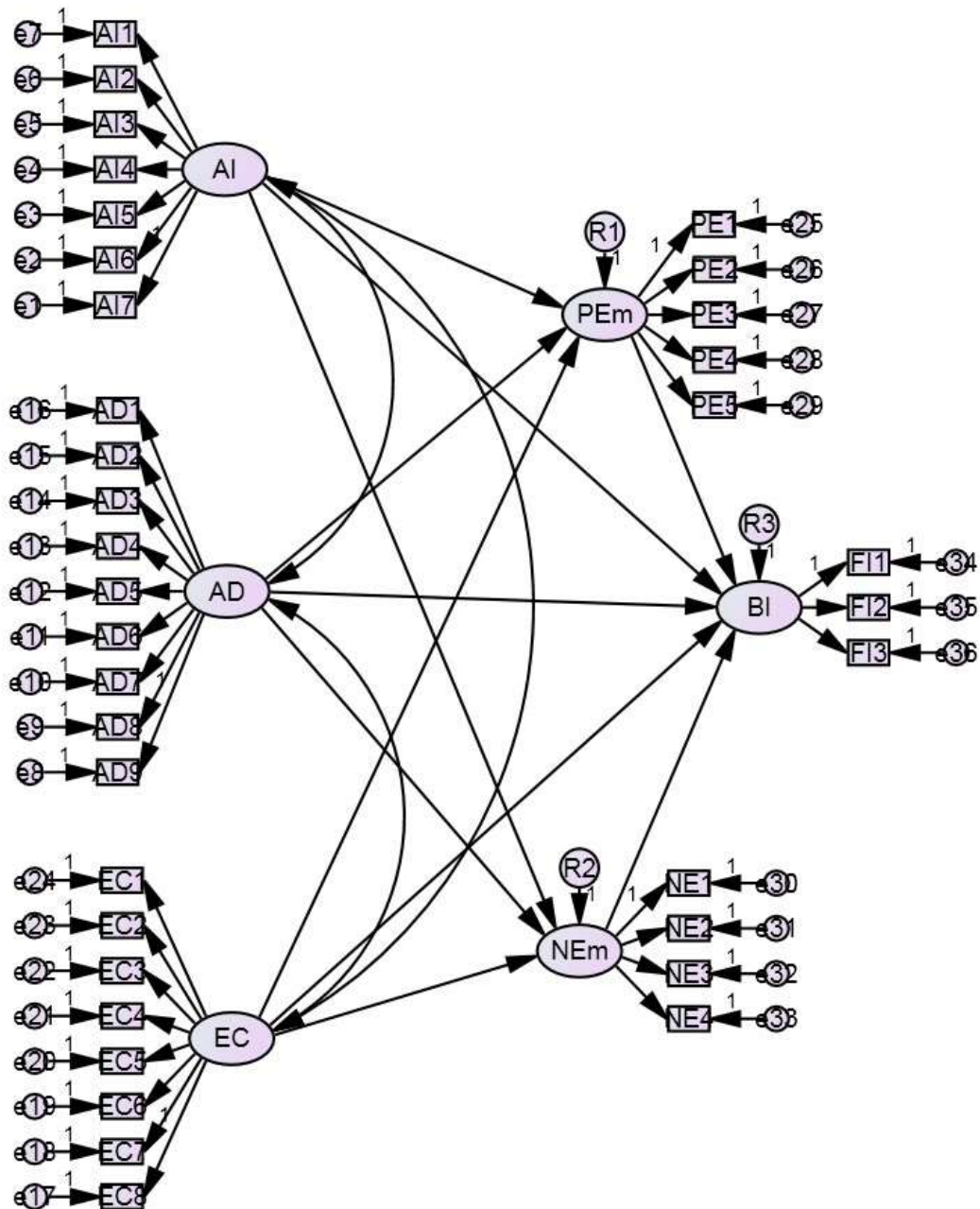


Figure 1.

Proposed model of museum physical environment, emotions, and behavioral intentions

Hypotheses 1 and 2 address the question of whether museum physical environment affects visitor’s emotions. Museum physical environment (Hypothesis 1) was found to be a significant predictor of positive emotions, with “access to information and building” ($\beta = .29, p < 0.01$), and “access to displays and special services” ($\beta = .31, p < 0.01$), showing a positive effect,

while “exhibitions and collections” has insignificant effect on positive emotions ($\beta = .07$ $p > 0.05$). Thus Hypothesis 1 is partially supported. Likewise, Hypothesis 2 was partially verified by showing a significant negative effect of museum physical environment “access to information and building” ($\beta = -.67$ $p < 0.01$) and “access to displays and special services” ($\beta = -.37$ $p < 0.01$) on negative emotions. However, “exhibitions and collections” ($\beta = .03$ $p > 0.05$) did not found to be a significant predictor of negative emotions. Hypotheses 3a and 3b postulated a relationship between positive and negative emotions and visitor behavioral intentions. Positive emotions about museum physical environment had a significant positive effect on visitor behavioral intentions ($\beta = .49$ $p < 0.01$), thus supporting hypothesis 3a. While, negative emotions had a significant negative effect on visitor behavioral intentions ($\beta = -.55$ $p < 0.01$), thus supporting hypothesis 3b.

Indirect effect: Further analyses of indirect effects were performed to investigate whether museum physical environment had an effect on behavioral intentions through the mediating role of visitors’ emotions. Positive and negative emotions worked in structurally diverse ways. “Access to information and building” had an indirect effect partially mediated through positive emotions and through negative emotions as shown in table 3. “Access to displays and special services” had an indirect effect partially mediated as well through positive emotions and through negative emotions. However, the mediating effect of both positive and negative emotions on “exhibitions and collections” and behavioral intentions was not supported ($p > 0.05$) suggesting that the effect of museum physical environment is partially mediated by both positive and negative emotions. Therefore, H 4 was partially verified.

Table 3: Direct, indirect, and total effects between museum environment, positive and negative emotions, and behavioral intentions

Hypotheses	Direct effect	Indirect effect	Total effect	Results
AI→positiveemotions→BI	.786	.145	.931	Significant $p < 0.05$
AI →negative emotions→BI	.98	-.406	.574	Significant $p < 0.05$
AD→positiveemotions→BI	-.806	.132	-.674	Significant $p < 0.05$
AD→ negative emotions→BI	-.875	.190	-.685	Significant $p < 0.05$
EC→ positive emotions→BI	.052	.034	.086	Not significant $p > 0.05$
EC→ negative emotions→BI	.060	-.016	.044	Not significant $p > 0.05$

DISCUSSION

Building on recent advances in emotions in service consumption (Dubé and Menon, 2000; Lee *et al.*, 2009; Pelegri’n-Borondo *et al.*, 2015; White, 2010; Wong, 2004; Wu & Li, 2015), this study extends the existing literature by investigating the predictive power of emotions on

disabled tourist's behavioral intentions. Moreover, this study introduces an integrative model including the cognitive and affective dimensions in assessing disabled visitors' experiences and the potential effect on future intentions in museum context. The current study examines the relationship between museum physical environment, disabled visitor's emotions, and behavioral intentions. In addition, the current study investigates the effect of museum physical environment on behavioral intentions through the mediating role of disabled visitors' emotions.

First, the study results indicate that the perceived quality of museum physical environment affects visitors' emotional responses. These findings are in line with previous literature showing a direct relation between physical environment and emotional responses (Amato and McInnes, 1983; Babin and Attaway, 2000; Mehrabian and Russell, 1974; Pullman and Gross, 2004). Specifically, findings showed a positive relationship between perceived quality of museum physical environment and positive emotions. On the other hand, findings revealed a negative relationship between perceived quality of museum physical environment and negative emotions. These findings are in line with prior research confirming the impact of cognition on emotions (Bagozzi *et al.*, 1999; Del Chiappa *et al.*, 2014). However, findings concerning museum physical environment showed two different results. As expected, the accessibility dimensions of the museum physical environment had a considerable significant influence on disabled visitors' emotions while "exhibitions and collections" dimension had not a significant impact on disabled emotional state. This confirms what Card *et al.*, (2006) and Darcy *et al.*, (2010) have indicated that attracting and satisfying disabled market necessitates adherence to providing inclusive practices and quality accessible experiences that surpass primary access requirement. This implies that assessing the quality of visitor experience at a museum differs according to the segments targeted. This is consistent with what Kotler and Kotler (2000) refer to that each market segment has its own needs and requirements which influence their experience evaluation. They are also in line with Falk (2016) who states that museum offerings (services-activities) should be relevant to the visitor specific needs and interests and that the perception of a museum is affected by the way the museum satisfy such needs and interests.

Results also showed a positive relationship between positive emotions and behavioral intentions; positive emotions had a significant positive impact on behavioral intentions to revisit, recommend to others, and give good WOM. Conversely, negative emotions had a negative impact on behavioral intentions. Surprisingly, the negative effect of negative emotions on disabled behavioral intentions was greater than the positive effect of positive emotions on behavioral intentions. This finding supports previous research which shows that the impact of negative emotions on post-choice evaluation is stronger than the impact of positive emotions (Inman *et al.*, 1997). In a similar study carried by Liljander and Strandvik (1997) showed that negative emotions have a greater impact on satisfaction than positive emotions. It might be more difficult to create positive feelings and positive experience for museum disabled visitors when lacking accessibility facilities, a result which was not revealed by previous literature that assess the influence of emotions on tourist experience and behavioral intentions specifically for those with special needs. Therefore, knowing the causes of evoking negative emotions is of great importance for museum managers. In this respect, prior research has shown that some of the main causes that elicit negative emotions among disabled people are lack of independence as a result of inaccessibility (building, parking), paucity of transport, unprofessional practices, inadequate communication and understanding (Kelly *et al.*, 2016). The direct effect of positive and negative emotion on behavioral intentions

provides some further insights into the emotions-behavior relation and supports prior literature (Prayag, *et al.*, 2017; Soscia, 2007) that emotions are important predictors of tourists' behavioral intentions.

Results revealed as well that emotions play a mediating role on the relationship between perceived quality of museum environment and behavioral intentions which is consistent with previous studies (Walters *et. al*, 2012) that emotion is a mediator between consumption vision and vacation purchase decision and is congruent with Lee, *et al.*, (2009) findings that emotions has a mediating effect in the relationship between brand personality and customers' repurchasing behaviors involving brand loyalty in the restaurant industry.

Given the significant relationships between perceived quality of museum physical environment and both positive and negative emotions, and behavioral intentions, museum managers should pay more concern to quality of museum environment particularly the accessibility dimensions in case of disabled visitors and consider the elicited feelings during the visit. Therefore, being acquainted with the feelings of visitors could bring valuable managerial insights. In this respect, it should be noted that making the museum accessible does not merely mean removing the physical barriers, because barriers may include the building, activities and programs, collections and exhibitions, and even the communication barrier through staff attitude towards disabled visitors. Accordingly, involvement in cultural and art activities, workshops and organizing more relevant and rather disabled tailored guided visits, could elicit positive emotions. There is evidence that engaging in art and cultural activities in museums and galleries has a positive impact on person's physical and mental health and well-being (Gordon-Nesbitt, 2015).

Improving exhibit practices and exhibitions design in a way that enhances disabled access, are further important aspects that could make a disabled visit an enjoyable experience. Disabled visitors should also be approached and be well informed about distinctive facilities and interests, creative activities and special events offered and organized at the museum through appropriate media.

Good communication is another area of interest that could enhance the emotional state and visiting experience of disabled visitors. As Czepiel and Gilmore (1987) point out, human interactions are always more engaging than impersonal ones. Building on this, the ability of museum staff to interact positively with disabled visitors will enhance their visiting experience and at the same time ascertain that all museum visitors have equal opportunities to access the museum. Since individuals differ in their abilities and needs even for those who have the same type of disability, museum staff should be trained to communicate positively with the specific needs for each group of disabled visitors and offer assistance and guidance when required; for instance, guiding them to the adequate place, access exhibition and participating in various activities and programs, creating and promoting workshops and guided visits. This will doubtless engage visitors regardless of their physical disability. In other words, feeling welcomed and valued from museum staff will definitely contribute to create positive emotion and satisfaction.

CONCLUSION

Although emotions have been considered a significant approach to examine the determinants of tourist satisfaction and behavioral intentions, yet no previous studies had investigated the effect of emotions on the disabled tourist experience. The current study moved beyond prior research (Del Chiappa *et al.*, 2014; Wu and Li, 2015) by adopting a multidimensional approach that examines disabled emotional responses toward physical environment.

The study provides a conceptual and empirically verified framework that captures disabled visitors' perceptions of museum physical environment and the potential effect of emotions on their behavioral intentions thereby extending existing research on tourists with physical disabilities. Findings support Mehrabian and Russell's proposed model (1974) that affective reactions to physical environment lead to different behaviors

The study concludes that disabled visitors' experiences at museums are derived from and associated with a cognitive and emotional assessment which extremely influence their visiting experience and eventually contribute to their behavioral intentions. More importantly, it underlines that the affective approach cannot be isolated from assessing the disabled tourist experience. It suggests as well that museum management must take into consideration emotional aspects of disabled visitor experience, where the museum physical environment particularly the accessibility facilities and services influence emotions and visitor's behavior. Likewise, the findings recommend that museums management should take into account key aspects that elicit positive emotions to be enhanced and triggers that evoke negative emotions to be avoided to satisfy this important niche market. The study establishes the representative dimensions of mobility-disabled museum experience and the relevant indicators that measure each dimension. Accordingly, museum managers can accurately assess the quality of certain services designed for visitors with special needs and the required advancements that should take place. More offerings (services- activities) that could satisfy the specific needs of disabled market should be considered. This is pertinent to museum managers, tour operators and travel agents specialized in serving the disabled tourist market who should improve their programs to guarantee creating positive emotions as well as providing more accessible services and activities for a highly satisfactory visiting experience.

Limitations and future research

Although the current study is considered an initial base for understanding the effect of emotions on mobilitydisabled visitor experience in a museum context, a few limitations should be mentioned. Findings are specific to mobility-disabled visitors; therefore, the study is not representative of other types of disabilities where differences may occur. Future research should extend the current study and investigate the effect of emotions on tourists with different types of disabilities.

It is worthwhile as well for future research to go beyond a museum setting and study the effect of emotions in other tourism services sectors including accommodation, flights, parks and other tourist attractions to better understand how emotions would influence disabled tourist experience and behavior.

Based on previous research (Han *et al.*, 2010; Hosany and Gilbert, 2010; Hosany *et al.*, 2015; Prayag *et al.*, 2017) which measure tourists' emotions in a retrospective way. The current research used a post visit survey by asking disabled visitors to recall their recent museum visit

within the last 6 months. However, since emotions may vary across time (Kuppenset *et al.*, 2007; Larsen, 1987) and may not be quite recalled (Donovan and Rossiter, 1982), retrieved emotions may be inaccurate. Therefore, future research including museum visitors in actual visit situations would offer far significant insights into emotions and disabled experiences.

Though the results revealed a significant effect of emotions on behavioral intentions, other potentially pertinent factors such as satisfaction and loyalty should be included in future models.

One more possible extension to this study is to consider human-service provider at a museum where the interaction with museum staff and its effect on visitors' emotions could bring valuable contributions.

Acknowledgment

Thanks to Irina Gorgăneanu-Meteșan; a travel manager at Sano Touring for her support in distributing questionnaires among disabled museum visitors. Sano Touring is a Romanian tour-operator, specialized in inbound tourism and accessible travel market.

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